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January's Issue Will
Feature The Outlook

How Would You Count 25 Billion Oranges?

How would you go about trying to estimate now how many oranges will be harvested next year, what with the probability of unusual weather—good or bad—changing the picture week by week?

The publication of citrus estimates by the Crop Reporting Service of the U. S. Department of Agriculture is quite a job. It requires long planning, and the close cooperation of Federal and State agencies, industry groups, and thousands of citrus growers.

Months before the first citrus estimate is made in October, a lot of spade work is done by the Agricultural Statisticians in Florida, California, Texas, Arizona, and Louisiana.

We rely very heavily on citrus producers because they know best the true condition of their prospective crops. So, in late September, questionnaires are mailed to thousands of citrus growers asking them to report the "percent of a full crop" they estimate is in prospect this season, and in Florida several thousand growers are asked to report the number of boxes they expect to pick from their respective groves.

But that's not all. The mailing chore for this monthly report is not completed until questionnaires have been

sent also to citrus packers and processors asking them to give their appraisal of the number of boxes of fruit that will be produced in the groves they control compared with the number produced in the same groves last season.

Objective Surveys

In addition to these cross-section opinions of crop prospects, the State Statistician makes a special effort to obtain check information from surveys covering actual counts and measurements of the fruit on the trees. These are known as "objective" surveys because the answers obtained are objective in nature and are not dependent on the human judgment factor.

Actual counts and measurements of fruit in representative groves and on representative trees are relied on to measure the size of the crop. However, these "objective" surveys are quite costly to make, as contrasted to the information obtained by mail, and so industry and State agencies assist in making them.

State and industry agencies have cooperated to the fullest extent possible. For example, in Florida, the citrus Growers Administrative Committee for many years has made available to our Florida office in Orlando the "frame counts" which have been conducted by field crews of the Committee.

These counts consist of placing a 2-foot square frame at the border of a tree about the height of a man's eyes and counting the fruit that falls within the 2-foot core from the border to the trunk of the tree.

And, again in Florida during the past 3 years considerable progress has been made in laying a sound foundation for objective surveys by the cooperation given our Florida office by Citrus Mutual, Growers Administra-

tive Committee, Citrus Commission, Florida Department of Agriculture, the Florida Experiment Station, and the Plant Board.

A 1,500-mile route has been laid out through the citrus belt and is being used as the basis of frame counts and other types of objective surveys. Along this route, every grove has been plotted to scale and pertinent information has been recorded on the variety and age of trees in each grove. Frame and limb counts, together with measurements of the size of individual fruits, have been made in a systematic and scientific manner along this route. And, after harvesting gets underway, monthly inspection trips are made along the same route to determine the percent of the trees that have been picked.

The preparation of the estimate each month during the growing season is not a one-man show. Actually, our State Statistician is only the focal point for the information which is furnished by growers, packers, processors, and industry organizations. His office is the hopper into which all this information is poured. He is the chief coordinator of the work. His staff carefully reviews, evaluates, and weighs the various "evidence" before arriving at a conclusion as to the size of the crop.

"Evidence" Is Weighed

Here's a typical example of what goes into the State Statistician's hopper of evidence from which he prepares the estimate for a particular month. In Florida, several hundred reports were received in early October from growers on the "condition" of the crop in their respective localities in terms of "percent of a full crop." These were listed by counties, simple county averages computed, and these, in turn, weighted by the relative importance of the various counties as citrus producers.

The Agricultural Situation is sent free to crop, livestock, and price reporters in connection with their reporting work.

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The State average condition represents that part of a full crop which reporting growers "thought" was in prospect in the State on the first of the month. In interpreting reported condition, an allowance must be made for the year-to-year changes in the number of bearing trees, the change in bearing capacity per tree, and changes in cultural practices such as the introduction of more effective fertilizers.

Counted by the Box

A total of about 1,000 individual grove owners or operators reported how many boxes of fruit they expected to pick this season and how many they picked from the same groves last season. When thrown into the statistical hopper these reports are handled in the same way as the condition reports, the final product being a State ratio showing how the growers' expected production this season compares with what they actually picked last season.

Changes from growers' reported ratios which are caused by subsequent storms, freezes, or unusual factors must be taken into consideration when appraising the ratio currently reported. Since this survey has been made annually since 1926, a large amount of information is on record showing the relationship between the judgment of the growers and the actual outturn of the crops.

In view of the large amount of work and planning that go into the USDA October citrus estimate, the question naturally arises as to how good the estimate is. This question cannot be answered without considering it in relation to some of the assumptions that are made when making an early estimate of the crop.

It is an oversimplified answer to say that Government's October 1 estimate of the 1954-55 orange crop in Florida was 8 percent too high and for the 1953-54 crop it was 13 percent too low; or that the 1954-55 Florida grapefruit estimate was 5 percent too high and the 1953-54 estimate was 11 percent too low. Actually, the October 1 estimates were probably closer to production prospects as they existed on *October 1* than the final outturn of the crops showed. This could be true because the

October 1 estimate is based on growing conditions as they existed up to October 1 plus the assumption that *average* growing conditions will prevail during the remainder of the season. This assumption is necessary because no one has been able to make accurate long-range weather forecasts.

And since the assumption of average weather is an ingredient of the early-season citrus estimate, it follows that the final outturn of the crop will differ from the October 1 estimate to the extent that growing conditions after October 1 depart from average. This means that the occurrence of a tropical storm, severe freeze, or deficiency of moisture after October 1 would reduce production below the October estimate. On the other hand, the absence of storms and freezes, an unusually ample supply of moisture, and mild temperatures would be favorable for sizing of the fruit and probably would bring about a production in excess of the October estimate.

As should be expected, the Government estimate gets closer to actual production as the season advances. For example, the December 1 estimate for the 1954-55 crop of Florida oranges was only 3 percent "off" whereas in October it was 8 percent off. By January 1, the grapefruit estimate was virtually "on the nose" as compared with a 5 percent deviation in October.

Picture Changes

The important thing to remember about the USDA estimates of citrus production is that they are not intended to be infallible forecasts of the exact number of boxes that eventually will be produced or picked. They represent, rather, an attempt to present a continuing picture of prospective production in keeping with conditions as they affect the crop from month to month. If conditions affecting the crop change, the estimate of prospective production is also expected to change. The statistician's main responsibility is to properly evaluate the factors that cause changes and to keep them in line with the facts.

Reginald Royston, Chief
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HOW MANY COTTON BOLLS TO A SQUARE?

How would you solve this riddle? How many cotton bolls are there in a square? Big bolls, little bolls, locks and squares—bolls are pods, and locks protect treasures and secrets. But for cotton, what is the square?

First, let's see how many cotton bolls there are in a square—in terms of a square of 43,560 feet, or one acre. There have been 3 successive years of record-high yields per acre of cotton—324 pounds in 1953; 341 in 1954; and 431 pounds in prospect for 1955. Compare these average yields with previous periods. The average yield during the 1920's was 162 pounds; in the 1930's it was 205 pounds, and in the 1940's it was 266 pounds.

Squares Change

What has happened to this average square of 43,560 feet to cause its yield to change from 162 pounds to an all-time high of 431 pounds in 1955? There are certainly more cotton bolls in this square now than there used to be. And, evidently this square of one acre has been reoriented, reshaped, and revitalized in recent years.

For purposes of estimating, this square of one acre can be cut up into smaller areas for making counts and observations on what is actually happening to plants with roots in this revitalized good earth. Farmers and statisticians are looking more to the cotton plant itself for the plant's own forecast as to how many bolls there will be for harvest.

Now, let's slice off one thousandth of an acre by measuring about that much area along one row. The given area then becomes about 10 feet of a row, a spot on which actual counts of large bolls can be made. (A large boll is one inch or more in diameter.) When counts are made on several similar spots scattered over the field, the plant begins to tell some of its secrets, at least as to the number of bolls already made.



In our research we have found that 10 feet of row is about the best size of sample to use in counting bolls. By measuring the distance between rows, the number of square feet in the sample spot can be computed.

For example, if the rows are 3 feet 4 inches wide, the area in the sample would be 3.33 feet times 10, or 33.3 square feet. There would be 1,303 such samples in an acre. To bring the sample count to a per acre basis, it has to be multiplied by 1,308—the expansion factor, a term dearly loved by statisticians.

You may say that gives you only an estimate of the total number of large bolls in an acre at that time. And you would be correct. To get an estimate of cotton that will be harvested, it is necessary to take into account the weight per boll, additional bolls that may make, insect damage, and harvesting losses.

In our research work, we count and weigh the open bolls on 10 feet of row and make counts of young fruit and of insect damage. After harvest, we go back to the same fields and gather and weigh all unharvested cotton on plants and on the ground in the sample spots. Some phases of this research, especially the cotton plant's fruiting habit and allowances made for additional bolls, will be discussed in a later issue of the Agricultural Situation.

Farm Survey

In late August, I was talking to an Arkansas plantation and gin operator about his cotton prospects. He said,

"I now have an average of about 9½ large bolls per foot of row. Some of these bolls are still soft and are subject to weevil and worm damage and boll rot. My counts of weevil punctures and boll worm eggs are building up. The plants are heavily loaded with young fruit. I am going to continue to dust as long as I can save one additional boll per foot. I believe with a fair break from the weatherman, I can save 5 more bolls. That would be about 15 bolls per foot or about 1½ bales per acre." He also added, "I am going to keep a close check on boll rot and will defoliate if necessary."

Knows His Squares

He was probably counting sampling spots of 10 feet and then reducing them to a per foot basis. I left with some positive information and the knowledge that I had been talking with a man who knew his cotton squares, on a per foot basis, or the genuine article produced by the cotton plant.

An obsolete definition of square—"a rule, principle, or standard"—has a part in forecasting. According to some farmers in the Central Belt, the "thumb" rule—"10 bolls per foot or 100 bolls in 10 feet will make a bale to the acre"—is about right in that section. However, in drier areas some say it takes one boll to the inch to make a bale to the acre. That's slicing it very fine but looking at it in another way, it's saying 12 bolls per foot or 120 bolls on 10 feet.

The difference between the two rules recognizes the fact that boll size changes not only from year to year but from area to area. If farmers in all areas applied the same rule on a per foot basis, an error of one boll could cause the production estimate, if made solely on that basis, to be off 1½ million bales. By the same token, an error of one boll when using the rule for 10 feet would cause an error of about 150,000 bales for the Nation. This certainly points up the necessity for each farmer to develop his own standard rule based on actual conditions and experience.

Fortunately, there is one positive answer to the question, how many cot-

ton bolls are there in a square? Among the many definitions of a square given by Webster is this one, "a quadrilateral area bounded by streets . . ." In the very center of Capitol Square in Atlanta, Ga., preserved in a glass case and shielded by the dome of the State Capitol, there is a cotton plant with 715 bolls—truly one of the plant wonders of the world.

But what about Webster's definition of the genuine article—the true cotton square? A square is "the three bracts subtending the flower of the cotton plant." In common practice, the cotton square is referred to as the entire young fruiting bud—bracts, calyx, ovary, pistil, stamens, and corolla. Botanically, it is not an embryo or small boll yet, because fertilization hasn't taken place. It is self-pollinating so all the parts are there. Normally, when fully matured, it produces a flower, white the first day and turning pink the next. The flower petals dry up or fall off, leaving the young boll embraced by the three bracts.

Now, what is your answer to the question, How many cotton bolls are there in a square? You say, "One"? Remember, it's still only a square by definition. The square may be stung or punctured by some insect. Friendly as cotton is, it may be disowned and cast off to wither and die—and of course there wouldn't be a boll. Then you say, "Well, there may not even be a boll, or there may be one boll in a square, if . . ."

Future Production

However, if we consider the potential bolls in a single square, that is, after the seed from one boll is planted and produces more plants and bolls, then what do you think? You will recall that all of the essential botanical parts of the flower are there, and surely the cell structure is complete with nucleus, genes, etc. Then, are not the plant cells that make up the cotton square literally packed with millions of "potential" bolls? Fact is, the square is the only source of cotton bolls for the future.

J. J. Morgan
Agricultural Estimates Division, AMS

"Bert" Newell's

Letter

My father used to say he never felt so good as when he had a barrel of flour and a barrel of sugar in the pantry, a well-stocked root cellar and smokehouse, and a big pile of stove-wood all stacked up in the shed. Now who wouldn't feel good with that kind of security before the winter winds begin to blow and the snow piles up?

Of course, nowadays folks don't live that way. Flour comes in sacks, and not many folks would think of buying 196 pounds all at one time. For those of you who might not remember, that's the weight of a barrel of flour. The deep freeze has taken over for the root cellar and in all my travels I seldom see any evidence of hog killing like we used to during the first cold snap in November.

Well, maybe the new ways are best, at least we don't have to bother to put the stuff up and even the best operators in home canning and preparation of meat have some failures. Nevertheless, being raised as I was, I still have an uneasy feeling until I at least get some firewood under cover, the storm windows secured, and things sort of battened down before snow blows.

About this time of year I get the same kind of feeling about our work in estimating crop and livestock production. The year is nearly over and we are beginning to put out the final estimates of production for this crop season. We have had our problems this past season; but then we always have problems because no two crop years are just alike. The weather pattern varies a lot. Drought areas in one year may have plenty of moisture the next. Trying to keep track of weather is a tough problem by itself.

Have you noticed what has been happening to yields per acre in recent years? Higher yielding strains have come into the picture. Then there is the soil conservation program together

with more effective insecticides, new fertilizers, and improved methods of applying them. Better feeding practices and a lot of other things have all added up to higher production per unit.


When I was a county agent a little over 30 years ago I used to have several farmers in my county whose ambition was to produce 100 bushels of corn per acre. Nowadays I go back and visit some of my friends and nobody bats an eye when you say 100 bushels to the acre. Take a look at this year's average cotton yield—about 431 pounds per acre—average for the United States as a whole—nearly a bale. Why only a few years ago we thought if a fellow produced a bale to the acre he was splitting a horn cross-wise.

I could cite more examples—yields of wheat, tobacco, pigs saved per litter, and a lot of other things—they all add up to problems for the crop estimator because if we do our job we have to keep abreast of all of these rapidly changing factors in production. And we aren't the only ones who have difficulty. Farmers have commented frequently on the unexpected yields they made this past year. One man said he didn't believe he had that many potatoes in the field until he dug them, and he could hardly believe it then.

I point these things out because they are important trends that have to be followed closely. And in this connection I want to thank all of you who have been so helpful and cooperative in letting some of our men come into your fields and make counts of plants, bolls, or ears of corn. Our only purpose in this work is to try to develop better ways of measuring the prospective production so we may be of greater service to you.

Well, I hope you have your pantry well stocked, your root cellar filled, a nice big pile of wood in the shed, and that Santa Claus will be good to you.

From all of us—MERRY CHRISTMAS AND A HAPPY NEW YEAR.



S. R. Newell
Chairman, Crop Reporting Board, AMS

VEGETABLE ACREAGE GUIDES STRESSED

Acreage-marketing guides for 1956 crop spring vegetables for fresh use, spring melons, and early commercial spring potatoes have been issued by the U. S. Department of Agriculture. The guides cover the 18 major spring vegetables and two spring melon crops that will be marketed in fresh form, principally during April, May, and June 1956, and 1956 early commercial spring potatoes.

The recommended acreage for the 1956 crop of spring vegetables for fresh market is 2 percent smaller than the 1955 acreage. The Department recommends acreage increases for mid-spring snap beans, late cabbage, early cucumbers, and early green peas.

Acreage cuts are recommended for early snap beans, early cabbage, carrots, sweet corn, late cucumbers, early lettuce, late onions, green peppers, shallots, and early tomatoes. Acreages equal to those in 1955 are recommended for lima beans, late snap beans, beets, broccoli, cauliflower, celery, eggplant, late lettuce, early onions, late green peas, spinach, and late tomatoes.

In 1955, spring vegetable production was about 1.6 percent above 1954 and 5 percent above the 1949-53 average. Spring vegetable prices in 1955 averaged 90.3 percent of the 1947-49 average prices and were about equal to the low prices in 1954.

The 1956 acreage guide for spring cantaloups and watermelons equals the 1955 acreage. Production of these melon crops in 1955 was 4 percent smaller than in 1954. Spring melon prices in 1955 averaged 126.7 percent of the 1947-49 average price, largely because of an unusually well balanced movement to market.

The early commercial spring potato acreage guide for 1956, by States, amounts to a national total of 131,020 acres compared with 150,800 acres harvested in 1955. With average yields, the probable production from the guide acreages would be 39 million bushels.

Issued seasonally prior to planting time, the guides are designed each year

to assist vegetable growers in planning production. Action by growers on the Department's recommended acreages is voluntary.

If production is in line with the guides for 1956, and if marketings follow a normal time pattern for the season, supplies should be adequate to meet all requirements.

A more detailed report, "1956 Acreage-Marketing Guides, Spring Vegetables for Fresh Market," is available through the State Agricultural Extension Services in spring vegetable States.

Beef Grades Change Proposed by USDA

The U. S. Department of Agriculture has proposed that the Commercial grade of beef be divided into two new grades designated as Standard and Commercial. The present grades for beef are Prime, Choice, Good, Commercial, Utility, and Cutter and Canner. The change is proposed in response to a recommendation from the Cattle and Beef Industry Committee.

It is proposed that the division of the present Commercial grade be made on the basis of maturity and that the grade name "Standard" be applied to beef from carcasses of younger animals of the grade and that "Commercial" be retained for beef from mature animals falling in the present Commercial grade.

It was the Committee's opinion that, if Commercial beef as produced from young cattle were segregated from that produced from older cattle and also given an appropriate name, a greater proportion of the younger beef would be federally graded. This would result in increasing the marketing efficiency for meat of this grade and be beneficial to both producer and consumer.

Any person who wishes to submit written data, views and arguments concerning the proposed amendment may do so by filing them with the Director of the Livestock Division, Agricultural Marketing Service, U. S. Department of Agriculture, Washington 25, D. C., within 60 days after November 15, 1955.

Turkey Industry Warns Growers To Reduce Present Intentions To Keep Breeder Hens

The Turkey Industry Advisory Committee, meeting with USDA officials at Washington November 17 and 18, concluded there is a definite risk that the industry will be over-expanded unless present intentions to keep breeder hens are considerably scaled down for the 1956 crop of turkeys.

Increase Planned

On October 1, farmers reported they intended to keep 13 percent more heavy breed hens than last year for egg production. These intentions are affirmed by the reports of pullorum testings, which show a 9 percent cumulative increase from the beginning of the season. Light breeds also show an intended increase, although not as sharp as for heavy turkeys.

"A turkey crop significantly larger than this year's 63 million birds, or an equivalent tonnage, would cause economic distress in the industry," the Committee declared. "A crop of 63 million birds could be produced from no more breeder hens than were on farms January 1, 1955. Any increased number of breeders for 1956 would raise potential turkey production beyond this level. Greater productivity per bird can also be expected in 1956. This is due to increased use of artificial insemination, continued improvement among strains of high-producing hens, and improved nutrition and management, as well as earlier egg production resulting in a longer laying season and more eggs per hen.

"This increased potential obviously would result in distress to egg producers and hatcherymen and later to growers." To bring numbers down to a reasonable level, much below the recently reported intentions, the Committee made these recommendations:

"1. Producers of turkey hatching eggs should assure themselves regarding the outlet for their potential production of eggs. We fear that, unless present plans are changed, many surplus or distressed eggs will be available during the spring. Confirming orders and securing firm commitments to the fullest

possible extent will be a wise course for 1956.

"2. Hatcheries should be advised to refrain from buying and hatching eggs without firm orders for poults.

"3. All testing agencies should be advised to recommend more rigid selection of breeders than has ever been done before. By eliminating the less desirable birds, this would assure a more profitable enterprise for the flock owner and better poults for the grower.

"4. The Committee can not over-emphasize the need for caution among long-established breeder-flock owners. They must approach the season with the realization that over-expansion will result in the sale of eggs and poults at distressed prices. We particularly emphasize the need for those long established in the turkey business to impress upon newcomers the need for positively assuring themselves that they have their potential eggs or poults sold. Under present competitive conditions a profit cannot be obtained from a breeder flock whose output is only partially sold.

Better Merchandising

"5. All segments of the producing and distributive industries handling turkeys should continue and redouble their efforts toward the effective merchandising of turkeys. These efforts should be immediate, with the objective of creating a Christmas demand that will attract to market hens which might originally have been intended as breeders.

"6. The Committee recognizes a need to develop export markets for poultry products, to the mutual advantage of both the United States and importing countries. The Committee recommends that the Department give prompt consideration to creating a committee of industry representatives from all branches of the poultry industry to assist the Department in developing expanded export outlets for poultry products."

FOOD MARKETING BILL INCREASES

Farmers will receive about \$18.3 billion for the food produced and sold in the United States in 1955.

The estimated cost of these food products at retail store prices is \$46.3 billion. The difference—\$28 billion—is the cost of marketing domestic farm-produced food.

Marketing Bill Higher

Compared with 1954, the total retail cost was up about 1½ percent. Farmers received about 3 percent less. The marketing bill was 4 percent larger.

Compared with the 1947-49 average, farmers received the same amount of money for a volume of products that was 19 percent larger, but the bill for marketing these products was up 44 percent.

The marketing bill includes charges for local assembly, transportation, processing, wholesaling, and retailing. (It does not include the additional charges for food sold in the form of meals in restaurants and other eating places.) Consumers are demanding and getting more convenience and services with the food they buy—more pre-cooked, frozen, packaged, and easier-to-serve foods.

Just as the farmer's receipts include both his costs and his profits, so the marketing bill includes both costs and profits.

Firms that market farm food products were paying their employees 44 percent more per hour in September 1955 than in 1947-49. In addition to paying higher wages, employers also contribute to social insurance and various "fringe benefits."

But marketing agencies are paying these higher wages to labor that is more productive than it used to be. It is estimated that while hourly earnings of all workers (including proprietors and unpaid family workers) in the food marketing industry rose 51 percent from 1947 to 1954, labor costs per unit of product increased only 39 percent. Marketing firms in recent years have made large investments in equipment, have improved their work methods,

trained their employees better, and have scheduled the flow of work more efficiently.

Transportation represents a large segment of the food marketing system, and here again we find higher charges. Railroad freight rates on major agricultural commodities are about 24 percent higher than in 1947-49. Operating costs of railroads have increased; average hourly earnings of labor, one of the principal costs, have more than doubled since World War II. Rates for domestic water carriers and motor carriers have also increased.

Marketing firms have also paid higher prices for the goods and services they buy such as packaging material, machinery, lumber, fuel, and power. These costs generally advanced sharply in the early post-World War II years, but have been relatively stable since 1951. Charges for depreciation and obsolescence have also risen, as might be expected in a period of rapid technological change. Rents, State and local taxes, and advertising costs have also gone up.

We have seen that costs have risen for food marketing firms. What kind of profits are they getting? Preliminary estimates indicate that marketing agencies' total dollar profits before taxes in recent years are little if any larger than they were in 1947-49. Income taxes take a larger proportion of profits than in that period, and labor costs, the largest single element in the marketing bill, have risen. One way to measure is the net profit per dollar of sales after taxes.

Less for Processors

A group of 46 leading companies that process food products averaged 1.3 cents per dollar of sales in 1954 after paying income taxes. In 1953, the corresponding rate was 1.9 cents and in 1947-49, 2.3 cents.

Five large wholesale food distributors got 1 cent in 1954, slightly less than in the previous year, and averaged 1.7 cents in 1947-49. Eight chain retail food stores averaged 1 cent in 1954, 0.9 cent in 1953, and 1.4 cents in 1947-49.

Kenneth Ogren
Marketing Research Division, AMS

PRODUCTION OF VEGETABLES FOLLOWS UPWARD TREND OF POPULATION

In the past 17 years the production of fresh market vegetables has followed the population trend very closely, except for 1944, 1945, and 1946. In those 3 years, production expanded rapidly under the stimulus of wartime demand. Peak production of 1946 was accompanied by lower prices, and acreage was reduced sharply in 1947. Yield per acre for the fresh market crops as a group has shown a rather steady upward trend throughout the 17-year period. Fresh market outlets absorb about two-thirds of the total vegetable production.

Of the nine most important vegetables, cantaloups, sweet corn, lettuce, tomatoes, and watermelons have shown an upward trend in fresh market production since 1949. Fresh market snap beans and green peas have declined in importance during this 7-year period, while cabbage and onions have shown no pronounced upward or downward trend.

The production of vegetables for processing has increased at a more rapid rate than the growth in population. It has also fluctuated more than production for fresh market.

Tomatoes usually account for more than half and sweet corn for more than one-fifth of the processing production. Hence the year-to-year variations are largely determined by these two crops.

Yield per acre for the 11 processing crops did not show an upward trend until after World War II. Much, but not all, of this increase in yield can be attributed to tomatoes.

Although the production of fresh market vegetables has increased in all seasons of the year, there have been shifts in seasonal distribution during the past 17 years. Winter crops have increased from 13 percent to 15 percent, and spring production has increased from 20 percent to 24 percent of the total. Summer production has declined from 46 percent to 42 percent and fall crops have declined from 21 percent to 19 percent of the total.

Summer and fall crops, which have declined in relative importance, meet

the greatest competition from home garden supplies.

Snap Beans

Production of snap beans for fresh market has declined moderately since 1949. This reduction has occurred largely in the spring and summer harvest seasons in the lower yielding States. Production during the winter and fall seasons is relatively stable. Curtailed production appears to be associated with diminishing market demand for fresh snap beans.

Production of snap beans for processing has increased substantially in recent years due to expanded requirements of the canning and freezing industries. Since 1953, production for processing has exceeded production for fresh market.

Cabbage

Annual production of cabbage for fresh market changed little in 1949-54. In 1955, a modest reduction in acreage and lower yields resulting from adverse spring and summer weather forced production to a relatively low level. Some reduction in spring production has occurred since 1949 but this has had little effect on annual output.

Utilization of cabbage for sauerkraut has fluctuated from 171,000 to 246,000 tons but demonstrated no definite trend since 1949.

Cantaloups

Expansion in cantaloup production is occurring primarily in shipping areas of south Texas, the Yuma area of Arizona, and the Blythe and San Joaquin Valley areas of California. These areas have the following characteristics in common: (1) A long growing season and a warm, arid climate, (2) availability of extensive land areas that can be irrigated, (3) use of improved varieties, and (4) general use of modern marketing methods. Production is declining in the Salt River Valley in Arizona and in the Imperial Valley in California due largely to economic pressure from competing areas. In

other States that produce cantaloups primarily for local markets, production appears to be fairly stable. A few States in the midsummer group have reduced cantaloup production and a moderate increase in production has occurred in some late-summer States.

Sweet Corn

For many years, production of sweet corn was largely confined to the summer season in local-market areas of Northern States. In recent years, there has been a spectacular increase in the production of sweet corn for fresh market in the winter, spring, and fall seasons, primarily in Florida and California, as commercial growers have developed techniques enabling them to supply distant markets with good quality fresh sweet corn. The volume produced during the summer months has shown little change nationally in recent years.

While production of sweet corn for processing has shown no definite trend since 1949, the level of production the last 7 years has been well above that of the 1940's.

Green Peas

In the last 16 years, the production of peas for fresh use has virtually disappeared as a commercial enterprise. During the same period the production for freezing increased about sevenfold. Production for canning expanded during World War II, but has shown no pronounced trend in the last 7 years.

Lettuce

Although the annual production of lettuce has increased about 15 percent since 1949, output the past 4 years has been relatively stable. The proportion of the crop grown in the 3 major States of California, Arizona, and Texas has remained unchanged during this period at about 85 percent. California has increased production about 17 percent since 1949, and Texas has more than tripled production, but Arizona's output has declined. Other States where production has increased significantly are Florida and New Jersey. In Oregon and Idaho, lettuce production has declined. Production in remaining States has shown little change.

Onions

Onion production during the last 7 years has ranged from 38.8 to 49.8 million sacks with no definite trend. However, average annual onion production in 1949-55 was 42.5 million sacks compared with the 1939-48 average of 38.6 million sacks. Increases during this 17-year period occurred in the early spring, late spring, and late summer seasons. The expanding production is the result of increasing yields on an acreage that is following a downward trend. There is a tendency for onion culture in all areas to be concentrated on the better lands and growers are employing improved onion strains and more fertilizer, dusts, and sprays to expand their operations vertically. Marketing practices have had a tendency to discourage the production of onions by many small growers and the industry is becoming dominated by large growers.

Tomatoes

Production of tomatoes for fresh market has shown an upward trend from 1949 to 1955. This is the result of increased production in the winter, spring, and fall seasons. The crop for summer harvest has remained relatively stable, despite shifts between producing areas. Production for processing reached an all-time high in 1951 but shows no definite trend for the 7-year period. However, there is a marked upward trend in the yield per acre of the processing crop.

Watermelons

From 1949 through 1952, total production of watermelons in the United States did not change significantly. Since 1952, however, production has been increasing at a considerable rate. This increase is associated with an uptrend in acreage rather than any significant change in yield. Contributing factors to this uptrend are: (1) The planting of more acreage in Florida, particularly for the early market, and (2) the additional acreage available in summer States where acreage reductions have occurred for other crops in control programs.

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POTATO PRODUCTION YIELDS SHOW CONTINUED GAIN IN 17 YEARS

Drastic reduction in acreage, a phenomenal increase in yield per acre, and the maintenance of volume at a high level have characterized potato production during the past 17 years.

Back in 1939, about 2.8 million acres were harvested. The 1955 harvested acreage will be a little less than 1.5 million acres. During the same period, yield per harvested acre rose from about 122 bushels to an estimated 266 bushels in 1955 (as of November 1), the highest of record.

Alltime Record

Potato production averaged 361 million bushels in 1939-42. From 1943 to 1950, when wartime incentives and price supports were stimulating factors, production reached an alltime record of 487 million bushels and averaged 428 millions. During 1951-54, when the crops were grown without the benefit of price supports, production averaged 351 million bushels. The 1955 crop was estimated on November 1 at 384 million bushels.

The greatest upsurge in yields per acre was after World War II when prices were supported at 60 to 90 percent of parity and growers were required to comply with Government acreage allotments in order to be eligible to receive payments. From 1945 to 1950 harvested acreage was cut 36 percent, but yield per acre rose 61 percent. This phenomenal increase in yield was brought about by several factors, including the reduction of low-yielding acreage, the concentration of production on specialized potato farms, and improved cultural practices. Beginning with 1951, when price supports were taken off, yield per acre leveled off and remained fairly stable until 1955.

Regionally, a significant decline has occurred in the 9 Central States, which now produce less than 20 percent of the national crop compared with 28 percent in 1939. The 11 Western States have shown a pronounced upward trend and now produce 32 percent of the total crop compared with 23 percent in 1939.

Changes in farm disposition of the potato crop give additional evidence of the recent trend towards commercialized production. As recently as 1940, only 67 percent of the crop was sold. During the 5 most recent seasons, sales have averaged close to 84 percent of the crop. Farm household use has declined from about 60 million bushels in 1939 to 18.4 millions in 1954. The quantity saved for seed to plant on farms where grown has been cut by more than half, partly because of the cut in acreage and partly because of the tendency of commercial growers to buy certified seed. The percentage of the crop lost through shrinkage and decay or fed to livestock on farms where grown has changed very little.

Off-farm uses of potatoes have also changed since 1940. Although total production is about the same as it was 15 years ago, the quantity sold is larger. Sales averaged 307 million bushels in 1950-54, compared with 262 millions in 1939-43. The biggest change is in the quantities processed for human food. Back in 1940, only 2.1 percent of total sales were processed for food, mostly potato chips. By 1954, the food processing industry took 14 percent of total sales.

Of the 42 million bushels processed for food, 32 million bushels were used for potato chips, 3.6 million for frozen french fries and other forms of prepared frozen foods, 3.0 million for dehydration, and 3.4 million for other uses as canning, hash, stews, and soups. Processors have specific requirements such as solid matter content, variety, and conditioning of the potatoes they buy.

Potatoes for Starch

Potatoes sold for non-food products such as starch have varied from 3.4 million bushels from the 1942 crop to more than 21.8 million bushels of the 1950 crop. Since these uses are usually a diversion of surplus production at salvage prices, the volume sold depends on the price.

Large quantities of potatoes were used for the manufacture of alcohol during the war, but distillers are no longer equipped to use potatoes. In recent years farmers sold around 5 to 8 percent of the crop for livestock feed.

Acreage and marketing guides issued by the Department of Agriculture indicated that a production of 339 million bushels in 1955 would be sufficient to meet anticipated market requirements. The 1955 planted acreage exceeded the acreage guides by nearly 9 percent and total production is estimated at 334 million bushels—45 million bushels in excess of the Department's recommended production. Overplanting of acreage guides was pronounced in most of the higher yielding States of the various seasonal groups and in the Red River Valley.

Large Supplies

Low prices for the large 1955 crops in the early and intermediate producing States retarded harvesting of summer potatoes and built up a backlog of summer supplies that exerted a depressing effect on the price of fall harvested potatoes. Storage supplies for marketing after January 1 will be large.

Large crops usually bring growers a smaller gross income than small crops. For example, sales from the 1954 crop of 356 million bushels were valued at 384 million dollars compared with only 248 million dollars from the large crop of 380 million bushels produced in 1953. Prices of only 50 percent of parity in September and October 1955 are indicative that a low income will be received by growers for the large 1955 crop.

Unless all potato growers in the specialized potato areas show a greater disposition to hold production more nearly in line with market outlets, recurring large crops and low prices normally can be expected. The acreage-marketing guides can help growers to plan an acreage that under average conditions will produce a crop of the needed size.

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SWEETPOTATO TRENDS

The sweetpotato production picture in the last 17 years is greatly different from the Irish potato situation. Acreage has declined by more than half since 1939 and production has dropped 42 percent, but yield per acre has shown no pronounced trend in recent years.

Acreage of sweetpotatoes has been on a downward trend since 1932 and by 1939 it had dropped to 728,000. This decline continued steadily (except for the war year of 1943 when it went up to 857,000 acres) until it reached a low of 314,000 acres in 1951. Since 1951, acreage has been on a slightly higher level and in 1955 is estimated at 338,700 acres.

The average yield of 93 bushels per acre for 1950-54 is only moderately higher than the 1939-43 average of 86 bushels. Production has dropped from 61,744,000 bushels in 1939 to 29,880,000 bushels in 1954. For 1955, the crop is estimated at 36,101,000 bushels as of November 1.

The pattern of acreage changes since 1939 has been characterized by drastic decreases in the noncommercial States and by moderate to big decreases in most commercial States except New Jersey, Louisiana, and California. New Jersey acreage has increased moderately; Louisiana and California show about the same acreage as in 1939. The commercial nature of the crop is evidenced by the fact that in 1949 about 75 percent of the crop was grown on only 15 percent of the farms that raised 1 acre or more of sweetpotatoes.

Price Is Influenced

Apparently, any deviation from the downward pattern of production sharply affects the prices farmers receive, particularly during recent years. For example, production in 1950 rose 11 percent above the previous year and the average price dropped 23 percent. By contrast, production in 1951 dropped 42 percent and the average price increased 85 percent. Production in 1955, which is estimated to be the largest since 1950, is likewise having a depressing influence on prices received by growers.

PRODUCTION OF FRUIT LAGS BEHIND INCREASING POPULATION

Total fruit production in the United States has increased about 17 percent during the last 15 years while population increased about 24 percent. This means that per capita production of fruits has been declining despite higher consumer purchasing power.

More Citrus Fruits

Production of citrus fruits has increased 70 percent since 1939, despite severe freeze damage in several producing areas. Citrus fruit now accounts for half of total fruit production, compared with about a third 15 years ago. The upward trend in citrus production is expected to continue for several years but at a slower rate of increase.

The way in which citrus fruit is used has changed considerably. Total fresh sales of citrus increased steadily until about 1946 and have declined moderately since, until they are now at about the same level as in 1939. On the other hand, processing of citrus fruits has continued to increase steadily and the level is now about four times as large as in 1939.

The trend in orange production has been upward for 50 years and will probably continue upward for several years but at a slower rate of increase. Oranges are now our largest fruit crop, and more than half are processed.

Production in Florida for most kinds of oranges continues sharply upward. In California, the trend has turned moderately downward for both navels and Valencias. California Valencias are essentially the only fresh oranges available during the summer and early fall, but this advantage has been sharply reduced by the competition of frozen orange concentrate from Florida. The pressure of this competition will probably increase as Florida production increases.

Many California groves are giving way to the expanding cities and towns, especially in Southern California. Arizona orange production probably

will not change materially in the next few years. Texas production will be relatively small for a few years because of severe freeze damage in 1949 and 1951.

Grapefruit production increased rapidly from 1939 until 1949 when the upward trend was halted by a freeze in Texas. Another freeze in 1951 killed most of the Texas trees. Texas production is expected to increase in the future. The trend in Florida grapefruit will probably continue moderately upward for several years.

Lemon production has not changed significantly during the last 15 years. A slight to moderate increase is possible in the next few years.

Noncitrus fruit production is about the same as it was 15 years ago and will probably remain at about this level for the next few years. Since 1939, smaller crops of apples, peaches, prunes, and figs have been offset by increases in pears, grapes, cherries, and cranberries. Apricots, plums, strawberries, and olives are at about the same level of production as 15 years ago.

Fresh sales of noncitrus fruits have declined moderately since 1939 while total processing increased about the same amount. Increases in canning, freezing, and other processing—mainly vinegar, wine, and jelly—more than offset a decline in dried fruits.

Apple Decline Halted

Apples account for about a third of the noncitrus fruit and provide almost half the fresh market supplies of domestic noncitrus fruit. Production appears to be leveling off at 15 to 20 percent below the production potential of 1939. Orchards with low yields and less desirable varieties have been removed. Processing has been increasing, particularly the canning of applesauce in the East.

Apple production in New England has increased moderately since 1939, in contrast with moderate to sharp de-

clines for all other important producing areas of the East. Michigan production has declined only slightly and is expected to hold about level or increase moderately during the next few years. Production in the other Central States is down about a third. In Washington a slight upward trend since 1943 is expected to continue during the next few years. California production has leveled off moderately below the 1947 peak and is expected to hold about steady for a few years.

Peach Trends

Peaches are exceeded in importance only by apples and grapes among non-citrus fruits. Fresh sales of peaches amount to about half of production and are second only to fresh apple sales in tonnage. Production increased sharply from 1939 until 1946 and has since declined to a level slightly below that of 1939. The disastrous freeze in the spring of 1955 in the Southern States reduced production capacity there for at least 2 or 3 years.

The potential level of peach production in California, where about half of the crop is grown, has increased moderately during the past 10 years. About two-thirds of California's peaches are clingstones, used principally for canning. California growers have put into operation a program to keep production of clingstones within the limits of market requirements.

Peach production in Colorado, Washington, and Oregon increased between 1939 and 1946 but has not changed significantly during the last 10 years. No important changes are expected in these States during the coming few years except some expansion in the Grand Coulee Project of Washington.

Production trends in nearly all areas of the Northeastern and North Central States have been moderately downward except in New Jersey, which has shown a moderate increase.

Pear production increased moderately between 1939 and 1947 and has since declined to about the same level as in 1939. The three Pacific Coast States produce more than four-fifths of the nation's pears and the proportion is increasing. Little change is expected

during the next few years. The pear crops in California and Oregon have increased about 50 percent since 1939. This increase was offset by decreases in nearly all Eastern and Central States. The Washington crop has not changed significantly.

The level of grape production increased about a fourth between 1939 and 1951. Since 1951, the trend apparently has turned downward. California continues to produce about nine-tenths of the crop. The Washington crop is more than four times as large as it was 15 years ago, and this upward trend will probably continue for a few years.

The trend in production of sweet cherries was sharply upward until 1949 and has not changed significantly since. Little change is expected in the near future. The production potential for sour cherries has increased steadily in the past 16 years and is now about 50 percent higher than in 1939. Production is expected to trend moderately upward for several years, because of extensive recent plantings in Michigan and New York.

Very little change in the production of plums is expected in the near future. Production of prunes has declined about a fourth since 1939 but is expected to change very little in the next few years. The level of apricot production has declined about a fourth since 1939 and this decline is expected to continue for some time but at a slower rate. Cranberry production has trended upward since 1939 and this trend probably will continue for a few years. Processing is the most important factor in the increase in cranberry production. More than half the cranberry crop is now processed.

More Tree Nuts

Total production of tree nuts—almonds, walnuts, filberts, and pecans—has increased about 40 percent during the past 15 years, with increases in each of the four major kinds. The trend should continue upward for almonds and walnuts for a few years, but production has probably leveled off for filberts and pecans.

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FARMERS' PRICES

Indexes (1910-14=100)	1954		1955			
	No- vem- ber	Year (aver- age)	Aug- ust	Sep- tem- ber	Octo- ber	No- vem- ber
Prices received by farmers.....	242	242	233	235	230	225
Parity index (prices paid, interest, taxes, and wage rates).....	279	281	279	279	280	279
Parity ratio.....	87	89	84	84	82	81

Farmer's share of consumer's food dollar—39 percent in October 1955; 41 percent in October 1954.

Pork Is Featured In Plentiful Foods

Pork gets another merchandising boost as the featured food for December on USDA's Plentiful Foods List.

With hog marketings running at near-peak volume, USDA is featuring pork in consumer-directed releases to press, radio, and television.

Retailers, wholesalers, and others cooperating with USDA's Plentiful Foods Program are making special efforts to merchandise pork effectively.

The hog and pork industry advisory group, which met with Secretary of Agriculture Benson in October, recommended intensified promotional efforts for pork. With the cooperation of the food trades and public information outlets in encouraging consumers to buy and use more pork, USDA hopes to stimulate pork consumption through normal channels.

While pork has been designated as "feature" for the month on USDA's December Plentiful Foods List, a number of other commodities also will get merchandising help. These include:

Beef, broilers and fryers, turkeys, potatoes, sweet potatoes, grapefruit, cranberries, grapes, winter pears, dates, dairy products, vegetable fats and oils, lard, and canned tuna.

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